

Missouri Participates as Lead State in SHRP Technology Implementation

Missouri recently volunteered to serve as one of 21 Lead States, created by an American Association of State Highway and Transportation Officials (AASHTO) task force, to implement innovative technology uncovered through the Strategic Highway Research Program (SHRP). SHRP, a five-year \$150 million research program, was established by Congress in 1987 to improve the performance, durability and safety of our nation's roads.

To ensure SHRP technology implementation, the task force examined ways of optimizing the application of technology at the state level. Research found that states had no way to share information and learn from each other's experience. The task force created the concept of having Lead States to take the lead in SHRP technology implementation, and to share information. By having state, Federal Highway Administration (FHWA) and indus-

try representatives work together, states capitalize on their own and each others' strengths to implement the technology.

The advantages of this cooperative effort are tremendous. One great advantage of sharing resources among the states translates into economic benefits for the entire nation. Working together as a team also results in more efficient implementation of technology. The scope of implementation would be overwhelming for any single state; but, by working together states will realize an accelerated implementation of technology. Another advantage of cooperative implementation is a quicker return on states' money. Ultimately, this cooperative effort would lead to a better understanding of technology and better

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Vehicle equipped with Ground Penetrating Radar (GRP) displayed at SHRP Showcase in Kansas City.

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quality end results.

The task force selected seven SHRP high-payoff technologies for Lead States to concentrate on and then asked for volunteers. Twenty-one states chose to serve as Lead States because they were committed to leading and assisting in the implementation of specific SHRP technologies in which they had interest and practical experience. Each state decided which technology areas they wanted to emphasize. Missouri chose to emphasize High Performance Concrete and the Assessment, Protection and Rehabilitation of Reinforced Concrete Structures.

AASHTO Lead State Workshop - St. Louis, Missouri

Once all states had chosen technology emphasis areas, they were invited to participate in a workshop, jointly sponsored by the AASHTO, Federal Highway Administration (FHWA) and the Transportation Research Board (TRB), that was held last September in St. Louis. The purpose of the workshop was to have each of the seven technology groups of Lead States develop their own work plan to promote the implementation of their specific technology.

At this 1 1/2 day workshop, 115 representatives from the FHWA, transportation agencies and the industry, came from 22 states to develop missions, goals and strategies for each of the seven technologies.

Critical Issues and Tasks pertinent to the success of the Lead State Program include:

- The industry, FHWA and state agencies need to work

together to make SHRP technology work at the state level.

- Technology areas are in need of financial resources to disseminate easily understandable information.
- Uniformity is needed in the use of all technology.
- States need to organize training workshops and showcases with the help of FHWA for industry and state agency representatives.
- A mechanism for uniformly assembling and sharing the data must be developed.
- Quality, teamwork and senior management's support at the state level are crucial to SHRP's success.

Assessment, Protection and Rehabilitation of Reinforced Concrete Structures

Missouri sponsored a SHRP Showcase Feb. 3-5 to begin disseminating information on Assessment, Protection and Rehabilitation of Reinforced Concrete Structures. This emphasis area examines new equipment and

information to repair and protect bridges and other concrete structures, as quickly and cost-effectively as possible. Representatives from Kansas, Nebraska, Iowa and Missouri attended the showcase, which included hands-on training on computer programs and all physical assessment equipment.

"As a Lead State, Missouri has a key role in this technology," says Chief Engineer Joe Mickes. "Missouri looks forward to continued progress and prosperity with SHRP technology and implementation. The results of working together with other Lead States means stronger transportation systems in Missouri and around the country."

On Feb. 24, Missouri attended a team leader meeting, sponsored by the AASHTO Task Force on SHRP Implementation, where representatives from all seven high-payoff technologies reported to the task force on the progress

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Lead States in SHRP Technology

SHRP Technology Groups

Alkali Silica Reactivity	PA	NC					
Assessment, Protection & Rehabilitation of Reinforced Concrete Structures	FL	VA	MO				
Innovative Pavement Maintenance Materials	PA	IA	CO	ID			
Preventive Maintenance	GA	MN	MI	TX	WI		
Superpave	NY	MD	FL	IN	TX	UT	
High Performance Concrete	NH	VA	MO	NE	TX	WA	
Anti-Icing/ Roadway Weather Information Systems	NY	PA	MN	IA	CO	NV	WA

of their emphasis areas. Senior Research and Development Engineer J.D. Wenzlick attended the meeting to report on the Assessment, Protection and Rehabilitation of Reinforced Concrete Structures. "Together Virginia, Florida and Missouri will evaluate 24 SHRP technologies, 8 in each state, and make recommendations for implementation," says Wenzlick. "The teams recommendations will be a guideline to the rest of the 50 states."

High Performance Concrete (HPC)

Missouri has made significant progress in the High Performance Concrete (HPC) technology area. HPC is concrete with enhanced strength and durability characteristics which contribute to stronger and more durable structures. In an effort to support Missouri's role as a Lead State in HPC, MoDOT continues to use cooperative efforts at both a national and state level to pursue the latest HPC technology. Missouri representatives were present when the HPC Lead State Team met last January in Washington, D.C. to evaluate team progress and initiate new action items. Missouri has also formed its own HPC focus team with MoDOT and industry representatives to develop HPC for use in pre-stressed bridge members and other uses. Missouri's first HPC bridge project is scheduled for an October letting date.

"The Lead State Program not only encourages Missouri to set an example and help other non-lead states in their development of HPC, but it's also an excellent opportunity to exchange technology with other HPC Lead State participants," says Patty Brake, senior research and development engineer. "Having state, FHWA

and industry representatives across the country to refer to, helps the progress of technology development in Missouri.

"The Lead State Team's real progress will actually be demonstrated in the advancements and

implementation of HPC in the non-user states of HPC," says Brake. "That is the whole objective of the Lead State program—nationwide implementation of technology for more cost-effective and better performance."

Missouri Priority Technology Projects Approval

First round approval of Missouri's Concept Statements for 1997 Priority Technology Projects have been received. This is a two stage process and the next step is to develop a workplan/evaluation plan for each project. Each workplan will address the:

Principal Investigator/Address

Estimated Completion Date

How the technology is to be evaluated

Draft report for review

Printed final report available for FHWA use.

These workplans will be reviewed by FHWA for consistency with the purpose and goals of the Priority Technology Program (PTP).

The PTP projects approved are as follows:

Project	Dollar Amount	Concept
Liquid Emitting Diodes (LED) Signal Head Project	\$18,000	Signal head system installation, testing and evaluation
Ground Penetrating Radar (GPR)	\$5,000	Investigation concerning concrete pavement
Fog Detection/Pavement Sensor Concept	\$30,000	Testing and evaluating phase

Through these PTP projects, the Research, Development and Technology Division hopes to identify and implement new ideas and products while identifying promising partnerships and technologies with potentials for numerous benefits. Upon approval of the workplans the projects can be authorized for funding within the two year time limit that this award is intended. PTP projects offer an excellent opportunity for partnering between universities, private industry, and Missouri Department of Transportation.

RD&T Division field tests and evaluates new products and processes

a. Work Zone Intrusion Alarms

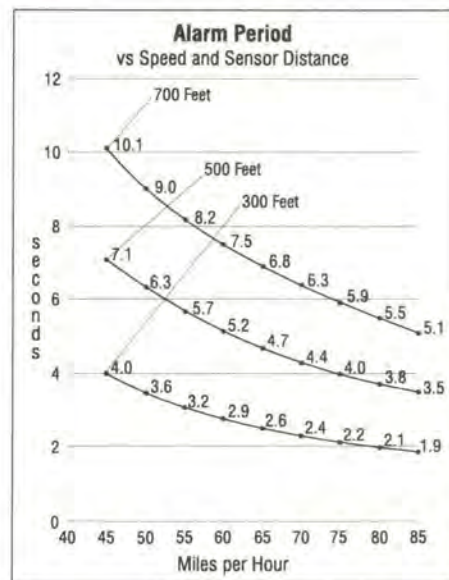
In the United States, there are approximately 25,000 injuries per year in roadway-repair zones; 600 to 900 persons die due to these injuries. Of these persons, 59% die as a result of vehicles penetrating a work zone. Any advance warning received by workers could help reduce these statistics. There are currently two approaches taken with work zone intrusion alarms.

The first is devices that have a pneumatic tube. An errant vehicle runs over the tube that is placed along the end taper of the work zone causing the alarm to sound, warning workers of impending danger. One of the companies that makes such a device is located in Rolla.

The second approach taken with work zone intrusion alarms involves the use of electronics. These devices have several pieces that have an invisible beam running between them. When the beam is broken by a vehicle, the alarm sounds. One particular such product that the Department is looking at is the Myriad Safety Sentinel by Traffic Management Systems, Inc. of St. Louis. The department has tried this device without satisfaction in the past; however, a redesign of the product seems to show quite a bit of potential.

The Research, Development & Technology Division is in the beginning stages of field testing these

products. More will be published in the future on this continuing research project.



b. Silt Stopper Ditch Check

State highway agencies are required by the Environmental Protective Agency (EPA) to provide erosion control measures on all highway projects on which excavation or grading is performed. These erosion control measures are monitored by the Missouri Division of Natural Resources (DNR). General permits are required by DNR. To date, the primary method of controlling erosion sediment in construction ditches has been the use of straw bales.

The Research, Development and Technology Division (RDT) is currently evaluating the Silt Stopper Ditch Check for use as an approved alternate to the traditional straw bale ditch checks. Ditch checks control erosion sediment during the life of the project or until permanent erosion control is established and functioning on Missouri Department of Transportation (MoDOT) roadway projects.

The final evaluation report will be reviewed by the Divisions of Research, Development and Technology, Construction and Maintenance

to determine if the product is acceptable. If the product is approved, a decision will be made to determine the method of implementation. Material and construction specifications would be developed prior to implementation of this product for contract use.

Articles needed!

Please consider articles for our publication throughout the year, your assistance with ideas for articles help provide information to our department and city/county customers. Our staff will prepare the printed information if you will share your ideas.

Did you know?

The TRB state representative for Missouri is the Division Engineer of the Research, Development and Technology Division, Mr. Jim Murray. Mr. Murray is appointed by the TRB Executive Committee to provide liaison between the department and the board. The representatives primary function is to keep the transportation department informed of TRB activities and to keep TRB advised of the current and contemplated research activities of the department. As the TRB state representative for Missouri, Mr. Murray has numerous general responsibilities concerning TRB committees, TRB activities, and coordinating Missouri's responses to TRB solicitations and questionnaires.

Transportation Research Board (TRB) Accessibility

The Transportation Research Board (TRB) distributes a variety of publications. Member states receive a full complement of publications. The Research, Development and Technology (RDT) Division is responsible for informing TRB of the need for publications and updates annually the state representative's publication distribution. The TRB publishes Transportation News (bi-monthly magazine), Research Records, Research Circular series and other major policy studies.

Transportation Research Information Services (TRIS)

TRB maintains and operates the Transportation Research Information Service, a computerized information storage and retrieval system that contains published

transportation research articles, reports and summaries of ongoing research projects. TRB member states submit research-in-progress material that updates this service.

TRIS is a major contributor to Missouri's RDT Division literature searches for new or anticipated research projects. FHWA provided funding for the hardware and software for the state's DOT use to be able to search TRB's in-house version of TRIS. Contact personnel in each state are able to create research-in-progress records using a microcomputer version of the TRIS software.

In addition to the RDT's microcomputer contact with TRIS, a TRB homepage on the world wide web is available at:
<http://www.nas.edu/trb/>

Through this web page informational accessibility is available on:

- Research in progress
- Transport CD ROM
- TRIS on-line
- Electronic Gateways
- Hot Topics
- Information Service Committees
- Libraries
- Database Comparisons
- TRB Home Page

Since state departments of transportation are sponsors of TRB, there is no charge for requested TRIS literature search's performed by staff. TRIS services are available on a fee basis for persons or organizations not affiliated with TRB.

HITEC Launches Web Site

HITEC is happy to announce they have launched a home page at www.cenet.org/hitec. In the age of the "Information Superhighway," the HITEC home page was developed to provide a special niche and gateway to highway innovation. Specifically designed for the global transportation community, you will find the following, and much more, at the HITEC home page:

- all of the *HITEC Highlights* newsletters
- product bulletins of all HITEC ongoing evaluations, including a brief description of the technology, contact information, and photos
- summaries of our published technical evaluation reports
- publication listing and order form for all full technical evaluation reports
- calendar of upcoming conferences, meetings, and expositions
- a listing of over 500 links to related transportation and highway sites

HITEC Director, J. Peter Kissinger explains, "Because our goal is to make this web site as user-friendly and informative as possible, I would welcome any feedback on how we could improve it. Similarly, as HITEC continues to grow and evolve into a clearinghouse for highway innovation, I would encourage any comments or direction you feel would be beneficial, whether it be about our reports, this newsletter, or some other aspect of the program.

In the meantime I encourage you to check out our home page and I look forward to seeing you on the Web!"

Office of Transportation Management System's partners with Research, Development and Technology Division

The department's traffic data collection responsibility is with the Office of Transportation Management Systems. OTMS is responsible for monitoring traffic on:

- State System
- All functionally classified roadways
- Highway Performance Monitoring System

Data collected in these three areas will provide adequate coverage of most cities with populations between 5,000 and 50,000.

Pilot Program

A proposal for piloting a data collection program at the district level was developed and is currently in its implementation stage. The pilot proposal included implementation, training, budgeting, equipment processing and tracking as items of concern. An aggressive three year tentative schedule was proposed to cover counties and associated cities within the pilot district.

Data Collection

Data collection will be addressed in the following manner:

1. Routine counts (coverage, automatic vehicle classification (AVC) and speed) These counts could be accomplished with ease from the district office since the majority of locations are within daily commuting distances.
2. City counts (HPMS and Functional Classification). These counts would be collected while providing the routine counts in the major cities. OTMS field acquisition technicians would assist district staff

in the larger metropolitan areas.

3. City counts (city streets). City traffic count programs would be coordinated with the Research, Development and Technology Division's Local Technical Assistance Program. This program allows cities to pinpoint additional traffic counts necessary and assists with traffic counting devices to collect traffic information on their city streets during the time frame when MoDOT collects the network traffic data. OTMS and the Local Technical Assistance Program will partner to facilitate the process of city counts on the local system. OTMS field technicians, in cooperation with LTAP personnel will provide training to city staff for data collection activities.

This proposed new process for municipal traffic monitoring would have several benefits.

1. Provide local traffic counts and traffic information on a regular three year basis.
2. Ability to identify system needs and potential congestion areas.
3. Database file with electronically transferable capabilities.
4. Ability to produce locally important maps to address hot topic areas for chamber and governing bodies.
5. Enhance local counts to address critical areas of growth and economic development.
6. Train individual local personnel for short term data collection emergencies.

7. Future benefit would be a more complete statewide local vehicle mile traffic (VMT) databank.

4. Airport Acoustical Counts. Airport counts are anticipated annually depending upon funding availability. The development at the airport level would be coordinated with the Multi-Modal Operations Division.

Research Program Development

MoDOT's Annual Research Work Program provides a concise description of research, development and technology activities coordinated and administered by the Research, Development and Technology Division. The program includes technical and financial responsibility of each Research, Development and Technology activity to help define and justify the expenditure of resources. Projects may address planning, design, construction, maintenance and other areas related to the transportation system.

Program Development

The annual Research, Development and Technology work program is developed to insure that MoDOT needs and priorities are addressed. Idea statements submitted by sources both internal and external to MoDOT contribute to the work program.

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Research Idea Statement

MoDOT employees will be encouraged to submit research ideas and will be provided the opportunity through a standardized research idea statement process which will include a tracking mechanism. Employees may also submit research ideas through the Quality Improvement Management System (QIMS). Universities in Missouri, private industry, public and private transportation organizations, FHWA and in general the transportation community will be encouraged to suggest research ideas for consideration. Research Idea Statements are solicited for emphasis areas established through the division's Strategic Plan or through collaboration of a Focus Group. An example of emphasis area might be safety, maintenance, structures, traffic, etc. Ideas need not be restricted to the pre-determined emphasis areas.

Critical Issues

Critical issues are those requiring research which may arise outside MoDOT's defined emphasis areas. Critical issues may possibly originate from change in policy, legislative action, natural disasters, or operational problems. A process will be put into place to address this type of critical issue in a timely manner.

MISSOURI DEPARTMENT OF TRANSPORTATION

RESEARCH IDEA STATEMENT

Research Idea Statements are being solicited under emphasis areas: For example: (A) Safety, (B) Maintenance, (C) Structures, (D) Traffic, etc.

RESEARCH: _____ (attach additional sheets if necessary)

Idea Title: _____

Idea Statement: _____

Objective: _____

_____ (optional) _____

Emphasis Area: _____

Application of Research Results: _____

Pertinent Divisions: _____

Key Words (Key words are needed to assist in literature search for Research Idea subject); _____

Name: _____ Date: _____

Title: _____

Organization: _____ Div/Dist. _____

Address: _____ Phone: _____

Complete and return to: Missouri Department of Transportation
Attn: Research, Development & Technology Div.
P.O. Box 270
Jefferson City, Missouri 65102

Phone:
FAX: (573) 526-4337

Screening Process

The screening process of submitted Research Idea Statements will be a combined effort of the Research, Development and Technology Management Team, the Technical Review Committee and the affected divisions. The Research, Development and Technology Division will be responsible for insuring that each idea is screened. Ideas are initially screened for research need with assistance of the Technical Review Committee. Ideas passing the screening process are then developed to research proposals and prioritized for incorporation into an annual Research, Development and Technology State Planning and Research Program.

Preliminary Evaluation

Evaluation of Research Idea Statements submitted will be based on the following:

1. Does the research idea subscribe to the emphasis areas indicated?
2. Does a definite problem or lack of knowledge exist?
3. Is there is definite need for the solution or criteria to be developed?
4. Does the submittal address how results will be used to solve the problem or revisecriteria?
5. Does the literature review indicate duplication of existing research?
6. Is the study justified based on potential benefit (benefits may be in the form of accident reduction, improved processes and techniques as well as cost savings.)

Submission Schedule

Research ideas can be submitted any time throughout the year for the annual SPR programming period. Idea statements received prior to March 1 will be considered in the upcoming fiscal year's (Oct.-Sept.) SPR RDT work program.

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Jefferson City, MO 65102

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Future Events

December 8-11, 1997
**American Traffic Safety
Services Association (ATSSA)**
"Pavement Marking and
Reflectivity"
Final plans in upcoming issue

The Missouri Transportation Bulletin is published by the Technology Transfer Assistance Program of the Missouri Department of Transportation, Jefferson City, Missouri. The opinions, findings or recommendations expressed in this Bulletin are not necessarily those of MoDOT or the Federal Highway Administration.

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